

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A plasma generation apparatus for processing a material under process using with a plasma, the apparatus comprising:

a power electrode separated from ~~the~~ a material under process at being processed by a predetermined interval;

a first dielectric layer interposed between the power electrode and the material ~~under process~~ being processed;

an auxiliary plasma (AP) earth electrode disposed adjacent to the power electrode and generating an auxiliary plasma using ~~the~~ a power smaller than power applied to generate a main plasma generated between the power electrode and the material ~~under process~~ being processed;

a second dielectric layer interposed between the power electrode and the AP earth electrode;

a gas flow portion for providing ~~mixed~~ a gas mixture to a space between the power electrode and the AP earth electrode for plasma reaction; and

a power controller controlling RF power supplied to the power electrode.

2. (Currently Amended) The apparatus of claim 1, further comprising ~~an MPa main plasma (MP)~~ earth electrode, which faces the power electrode and is disposed adjacent to the material ~~under process~~ being processed, for generating the main plasma.

3. (Currently Amended) The apparatus of claim 2, wherein the MP earth electrode includes a conveyer belt for transporting the material ~~under process~~ being processed while maintaining an earth state.

4. (Original) The apparatus of claim 1, further comprising:

a capacitance earth electrode disposed adjacent to the power electrode; and

a third dielectric layer interposed between the capacitance earth electrode and the power electrode.

5. (Currently Amended) A plasma generation apparatus for processing a material

~~under process using~~with a plasma, the apparatus comprising:

a power electrode separated from ~~the~~a material ~~under process at~~being processed by a predetermined interval;

a first dielectric layer interposed between the power electrode and the material ~~under process~~being processed;

an earth body including an ~~AP~~auxiliary plasma (AP) earth electrode disposed adjacent to the power electrode and generating an auxiliary plasma using ~~the~~a power smaller than the power used in generating a main plasma ~~generated~~ between the power electrode and the material ~~under process~~being processed and a capacitance earth electrode disposed adjacent to the power electrode and forming a single body with the AP earth electrode;

a second dielectric layer interposed between the power electrode and the earth body;

a gas flow portion for providing ~~mixed~~a gas mixture to a space between the power electrode and the AP earth electrode; and

a power controller controlling RF power supplied to the power electrode.

6. (Currently Amended) The apparatus of claim 5, wherein:

the power electrode ~~is formed in~~has a panel shape and is disposed above the material ~~under process at~~being processed by a predetermined interval; and

the earth body ~~is formed in~~has a panel shape ~~in which~~and the AP earth electrode and the capacitance earth electrode face the power electrode covered by the second dielectric layer.

7. (Currently Amended) The apparatus of claim 5, wherein the gas flow portion includes:

a first flow path in which the ~~mixed~~gas mixture flows from ~~the~~outside;

a second flow path connected to the first flow path and ~~formed~~parallel to the power electrode; and

a plurality of orifices ~~formed on the~~in an inner wall of the second flow path ~~in order~~ to provide the ~~mixed~~gas mixture to the power electrode.

8. (Currently Amended) The apparatus of claim 7, wherein:

the gas flow portion further includes an inflow chamber ~~provided~~located between the

AP earth electrode and the dielectric layer; and

the orifices ~~connecting~~connect the second flow path to the inflow chamber.

9. (Original) The apparatus of claim 5, further comprising:

a discharge needle disposed between the AP earth electrode and the second dielectric layer; and

an igniter electrically connected to the discharge needle.

10. (Currently Amended) The apparatus of claim 9, ~~wherein~~including a lead wire connecting the discharge needle to the igniter and that includes a gap having a predetermined space.

11. (Currently Amended) The apparatus of claim 5, ~~wherein~~including:

a plurality of the power electrodes~~are~~, the power electrodes being arranged in a row ~~and vertical, perpendicular~~ to a transportation path of the material ~~under process; being~~ processed, wherein the first and second dielectric layers are ~~formed on the surface~~surfaces of the power ~~electrode~~electrodes; and

~~each~~ a plurality of the earth bodies, one of the earth bodies ~~is~~being interposed between each pair of the power electrodes.

12. (Currently Amended) A plasma generation apparatus for processing a material ~~under process using~~with a plasma, the apparatus comprising:

a power electrode ~~formed in a cylindrical~~having an elongated shape and separated from ~~the a material under process at~~being processed by a predetermined interval;

a dielectric layer covering ~~the circumference of~~ the power electrode circumferentially;

an ~~AP~~auxiliary plasma (AP) earth electrode disposed adjacent to the power electrode and generating an auxiliary plasma using ~~the a~~ power smaller than ~~the~~ power used in generating a main plasma generated between the power electrode and the material ~~under process~~being processed;

a gas flow portion for providing a reaction gas to a space between the power electrode and the AP earth electrode; and

a power controller controlling RF power supplied to the power electrode.

13. (Currently Amended) The apparatus of claim 12, further comprising ~~an MP a~~
main plasma (MP) earth electrode contacting the material ~~under process~~being processed and
facing the power electrode.

14. (Currently Amended) The apparatus of claim 13, wherein the MP earth electrode
includes a conveyer belt transporting the material ~~under process~~being processed while
maintaining an earth state.

15. (Original) The apparatus of claim 12, further comprising a capacitance earth
electrode partially containing the power electrode and the dielectric layer.

16. (Currently Amended) The apparatus of claim 15, wherein:
the capacitance earth electrode and the AP earth electrode are ~~formed in~~ a single body
~~to form~~as an earth body; and
the gas flow portion includes a gas flow path ~~formed in~~ the earth body.

17. (Currently Amended) The apparatus of claim 16, wherein:
a portion of the dielectric layer is exposed ~~from the~~at a bottom of the earth body; and
the AP earth electrode is ~~installed~~ adjacent to the ~~exposed~~
layer that is exposed.

18. (Currently Amended) The apparatus of claim 16, wherein the gas flow portion
includes:
a first flow path in which the reaction gas flows from ~~the~~ outside;
a second flow path ~~formed~~ parallel to the power electrode and connected to the first
flow path; and
a plurality of orifices ~~formed on the~~in an inner wall of the second flow path ~~in order to~~
provide the reaction gas to the power electrode covered by the dielectric layer.

19. (Currently Amended) The apparatus of claim 18, wherein:
the gas flow portion further includes an inflow chamber ~~provided~~located between the

AP earth electrode and the dielectric layer; and

the plurality of orifices connects the second flow path to the inflow chamber.

20. (Currently Amended) The apparatus of claim 12, wherein:

the dielectric layer is ~~formed as~~ a hollow body; and

~~the inside diameter of~~ the power electrode has an outside diameter and the dielectric layer ~~is longer~~ has an inside diameter larger than the outside diameter of the power electrode.

21. (Currently Amended) The apparatus of claim 12, wherein: ~~grooves are formed~~

~~on the~~ a surface of the power electrode includes grooves; and the grooves face the material ~~under process~~ being processed.

22. (Currently Amended) The apparatus of claim 12, further comprising:

a discharge needle disposed between the AP earth electrode and the dielectric layer ~~or between the MP earth electrode and the dielectric layer~~; and

an igniter electrically connected to the discharge needle.

23. (Currently Amended) The apparatus of claim 22, ~~wherein~~ including a lead wire connecting the discharge needle to the igniter and that includes a gap having a predetermined space.

24. (Currently Amended) The apparatus of claim 12, ~~wherein~~ including:

a plurality of the power electrodes covered by a plurality of the dielectric layers ~~are~~, the power electrodes being arranged in a row and disposed ~~vertical~~ perpendicular to a transportation path of the material ~~under process~~ being processed; and

~~each~~ a plurality of the AP earth electrodes, one of the AP earth electrodes is ~~installed~~ being located adjacent to each of the dielectric layer layers.

25. (Currently Amended) The apparatus of claim 12, ~~wherein~~ including:

a plurality of the power electrodes and of the dielectric layers ~~are~~, the power electrodes being arranged in a row and disposed top and bottom of ~~the~~ a transportation path of the material ~~under process~~ being processed; and

a plurality of the AP earth electrodes, the AP earth electrodes ~~are installed~~ being
located adjacent to the ~~respective~~ dielectric layers, respectively.

26. (Currently Amended) The apparatus of claim 12, wherein the power electrode ~~is~~
~~formed in a shape of~~ has a ~~cylinder~~ cylindrical or a ~~polygon~~ polygonal prism shape.

27. (Currently Amended) The apparatus of claim 12, wherein the power electrode
and the dielectric layer have an uneven ~~portion of the surface~~ portion.

28. (Currently Amended) The apparatus of claim 12, wherein the AP earth electrode
and the gas flow portion are ~~provided~~ located ~~at the both~~ opposite sides of the power electrode
covered by the dielectric layer, ~~respectively.~~